

Claims

1. A method for treating and/or preventing cell necrosis and diseases associated therewith, comprising the inhibition of one or more elastase enzymes within said cells.
2. A method according to claim 1, comprising administering to a subject a therapeutically effective amount of one or more elastase inhibiting agents, wherein said agents inhibit the enzymatic activity of intracellular elastase in the cells to be treated.
3. A method according to claim 1, wherein the one or more agents administered cause partial conversion of necrosis to apoptosis, and wherein said method further comprises inhibiting said apoptosis.
4. A method according to claim 1, wherein the cells to be treated are selected from the group consisting of neuronal cells, purkinje cell, hippocampal pyramidal cells, glial cells, hematopoietic cells, lymphocytes, macrophages, hepatocytes, thymocytes, muscle cells, fibroblasts, myocardial cells, epithelial cells, bronchial epithelial cells, glomeruli, lung epithelial cells, keratinocytes, gastrointestinal cells, epidermis cells, bone and cartilage cells.
5. A method according to claim 1, wherein the diseases associated with cell necrosis are selected from the group consisting of neurodegenerative disorders (e.g., dementia),

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leukemias, lymphomas, neonatal respiratory distress, asphyxia, incarcerated hernia, diabetes mellitus, tuberculosis, endometriosis, vascular dystrophy, psoriasis, cold injury, iron-load complications, complications of steroid treatment, ischemic heart disease, reperfusion injury, cerebrovascular disease or damage, gangrene, pressure sores, pancreatitis, hepatitis, hemoglobinuria, bacterial sepsis, viral sepsis, burns, hyperthermia, Crohn's disease, celiac disease, compartment syndrome, necrotizing procolitis, cystic fibrosis, rheumatoid arthritis, nephrotoxicity, multiple sclerosis, spiral cord injury, glomerulonephritis, muscular dystrophy, degenerative arthritis, tyrosemia, metabolic inherited disease, mycoplasmal disease, anthrax infection, infection with other bacteria, viral infections, Anderson disease, congenital mitochondrial disease, phenylketonuria, placental infarct, syphilis, aseptic necrosis, avascular necrosis, alcoholism and necrosis associated with administration and/or self-administration with, and/or exposure to, cocaine, drugs, chemical toxins, agrochemicals and heavy metals.

6. A method for inhibiting and preventing cell necrosis *in vitro*, comprising causing an effective amount of one or more elastase inhibitors to enter the cells to be treated.

7. A pharmaceutical composition for the treatment and/or prevention of cell necrosis and diseases associated therewith, wherein said composition comprises therapeutically effective amounts of one or more agents that inhibit the enzymatic activity of one or more elastase

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enzymes in the cells to be treated, and one or more pharmaceutically acceptable excipients.

8. A pharmaceutical composition according to claim 7, for the treatment and/or prevention of cell necrosis in cells selected from the group consisting of neuronal cells, purkinje cell, hippocampal pyramidal cells, glial cells, hematopoietic cells, lymphocytes, macrophages, hepatocytes, thymocytes, muscle cells, fibroblasts, myocardial cells, epithelial cells, bronchial epithelial cells, glomeruli, lung epithelial cells, keratinocytes, gastrointestinal cells, epidermis cells, bone and cartilage cells.

9. A pharmaceutical composition according to claim 7, wherein the diseases associated with cell necrosis are selected from the group consisting of neurodegenerative disorders, leukemias, lymphomas, neonatal respiratory distress, asphyxia, incarcerated hernia, diabetes mellitus, tuberculosis, endometriosis, vascular dystrophy, psoriasis, cold injury, iron-load complications, complications of steroid treatment, ischemic heart disease, reperfusion injury, cerebrovascular disease or damage, gangrene, pressure sores, pancreatitis, hepatitis, hemoglobinuria, bacterial sepsis, viral sepsis, burns, hyperthermia, Crohn's disease, celiac disease, compartment syndrome, necrotizing procolitis, cystic fibrosis, rheumatoid arthritis, nephrotoxicity, multiple sclerosis, spiral cord injury, glomerulonephritis, muscular dystrophy, degenerative arthritis, tyrosemia, metabolic inherited disease, mycoplasmal disease, anthrax infection, infection with other bacteria, viral infections, Anderson disease, congenital mitochondrial disease, phenylketonuria,

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placental infarct, syphilis, aseptic necrosis, avascular necrosis, alcoholism and necrosis associated with administration and/or self-administration with, and/or exposure to cocaine, drugs, chemical toxins, agrochemicals and heavy metals.

10. The pharmaceutical composition according to claim 7, further comprising one or more inhibitors of apoptosis.

11. The use of one or more elastase inhibitors in the preparation of a medicament for treating and/or preventing necrosis of cells and diseases associated therewith, wherein said elastase inhibitors are capable of entering said cells.

12. Use of one or more elastase inhibitors together with one or more inhibitors of apoptosis in the preparation of a medicament treating and/or preventing necrosis of cells and diseases associated therewith, wherein said elastase inhibitors are capable of entering said cells.

13. A method for treating and/or preventing aging, comprising inhibiting one or more elastase enzymes, optionally further comprising inhibiting apoptosis and optionally further comprising administering one or more anti-aging agents to a subject in need thereof.

14. A pharmaceutical composition for the treatment and/or prevention of aging, wherein said composition comprises therapeutically effective amount of one or more agents that inhibit the enzymatic activity of one or more elastase enzymes together with pharmaceutically acceptable excipient, and optionally in combination with apoptosis inhibitors and anti-aging agents.